

# Estimates of Gross National Product in Constant Dollars, 1929-49

**THIS** report presents annual estimates of the gross national product in constant (1939) dollars for the period 1929-49. They are intended to fill a large gap in the existing body of official national income statistics.

These new estimates are the results of an Office of Business Economics study in which constant-dollar gross national product totals are being built up through price deflation of the detailed components of the published current dollar series. To obtain the estimates presented here, the completed portions of this study were drawn together and short-cut estimating procedures were adopted for segments on which work is still in progress.

## Need for constant-dollar gross national product

The national income and product estimates hitherto published by the Office of Business Economics have been exclusively in terms of current dollars. In times of changing prices, however, many uses of the statistics require the separation of the price and volume factors underlying the current dollar estimates. For some purposes, the current dollar data cease to be relevant, as in studies of real output and of productivity. For others, they need to be supplemented by constant dollar data, as in analyses of inflationary processes. In the current economic situation, in which questions relating both to the production potential and to inflation loom large, constant dollar data are of unusual relevance and value.

This consideration, together with the fact that the basic deflation study was sufficiently advanced to permit the derivation of reasonably reliable estimates, underlay the decision to publish the summary totals contained in this report. The final estimates of gross national product in constant dollars will include additional statistical detail and will be accompanied by a full explanation of their conceptual and statistical bases. The present report is limited mainly to a discussion of the considerations that are most essential to the use of the interim data.

These data have the same scope as the current-dollar gross national product. (See National Income Supplement to July 1947 Survey of Current Business and July 1950 Survey.) This is a measure of the market value of the Nation's economic output of goods and services. It covers not only production of the domestic business system but also includes allowances for economic services performed in the household sector and by nonprofit institutions, for the services provided by government, and for production available to the Nation by virtue of its net ownership of claims on foreign countries.

National product is termed "gross" in that no deduction is made for business and institutional consumption of durable capital goods. All other business products, such as raw materials, used up by business in the course of production are, however, excluded; and in this principal respect the

measurement of national production is net in that it excludes intermediate products and covers final output only.

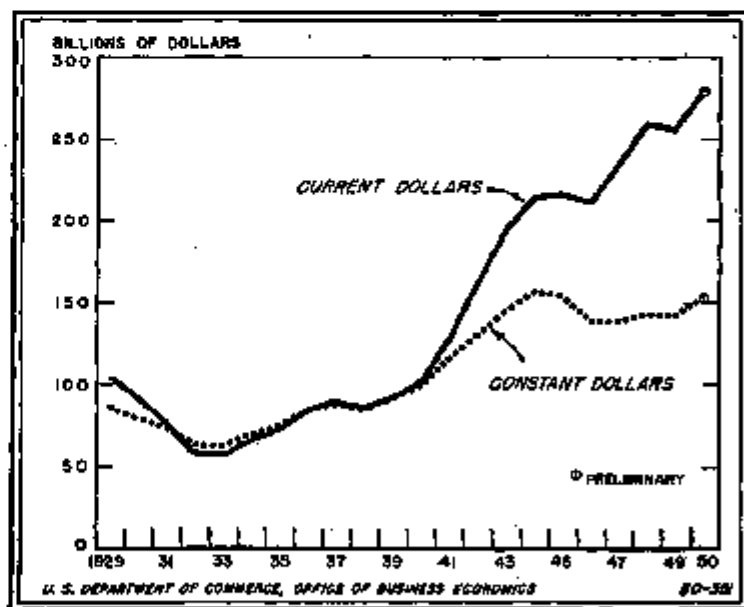
## Changes in the Volume of National Output, 1929-50

In the following section, the main statistical results of the present study are summarized. The remainder of the report is devoted to a discussion of some of the technical aspects of the constant dollar measure of national output.

### Cyclical and long-run movements in output.

The accompanying chart compares the movements of the constant-dollar and current-dollar gross national product series over the 1929-50 period. Both series drop from the cyclical high of 1929 to 1933, the low of the great depression. There follows a period of recovery, interrupted in 1938. The upward movements accelerate in 1940 and 1941, the years of increasing economic mobilization prior to World War II.

Chart 1.—Gross National Product in Current and Constant Dollars



Source of data: U. S. Department of Commerce, Office of Business Economics.

Both measures register further advances during the war and a decline in reconversion year 1946. For both, 1950 is the postwar high.

However, the movement of the constant dollar series differs in two major respects from that of the current dollar series. First, the cyclical swing of the constant dollar total is narrower, since over the course of the business cycle prices and volumes tend to move together. This is seen clearly for the 1929-33 period, when national production dropped thirty percent in real volume, as compared with a shrinkage of almost one-half in its current monetary value.

NOTE.—Mr. Jaszi, Associate Chief of the National Income Division, was responsible for the preparation of these estimates, with Mr. Kendrick of the National Economics Division as his principal assistant. Major contributions to the deflation project were made by Edward O. Bassett, Carolyn O. Bernhard, Morris Cohen, Joseph H. Epstein, and Millard L. Gollon. Acknowledgment of their specific contributions and of the work of other staff members will be made when the final results of the study are published.

The second difference is that the constant dollar measure of gross national product shows a lesser long-term increase than the current dollar measure—a reflection chiefly of the price inflation associated with World War II and its aftermath. Over the two decades from 1929 to 1950 national production increased three-fourths in real terms, but one and two-thirds in current dollar value.

A simple and meaningful measure of the long-term rate of growth in national production, utilizing the span of years covered by the new data, is provided by the average annual percentage rate of growth based on the change from 1929 to 1950, both peacetime years of close-to-full utilization of productive resources. On the basis of this calculation, the average annual rate of increase in the real volume of national production is about 2½ percent.

### *Trends in productivity*

A few broad comparisons of production and labor input may also be given. They will be made in terms of private-industry gross product, since the contribution of Government to national output is the major instance in which output was taken to move with man-hours or employment, with no allowance for changes in productivity.

The increase in real gross private product from 1929 to 1950 was over 75 percent. During this period, the number of persons engaged in production—full-time equivalent employees plus active proprietors—increased by 24 percent. An average annual rate of growth in real private product per person engaged of about 1½ percent is implied. This is very similar to the annual rates of increase from 1929 to 1941 and to 1949, two other peacetime years of high level activity.

On a man-hour basis, the rate of increase is greater, because average hours worked per week in the private economy have decreased by about 10 percent since 1929. Accordingly, the average annual rate of increase in real private product per man-hour since 1929 has been somewhat in excess of 2 percent.

It is important to realize that productivity increases computed in this fashion are attributable not only to labor, but reflect the working of all factors that influence productivity—for instance, technological progress, increased amounts of capital equipment, and better organization and management. In addition, they register not only changes in gross product (that is, output less purchases of raw materials and other intermediate products) per unit of labor input within individual industries, but also shifts of workers among industries in which the gross product per unit of labor input differs.

A striking example of such a shift is the continual decline in the proportion of the labor force engaged in farming. Since real product per man-hour is two-thirds less in farming than in the private nonfarm sector, this shift would in itself have caused an appreciable increase—approximately one-half of a percentage point—in the average annual rate of growth in real private product per man-hour, even had there been no improvement in productivity in the two sectors separately.

In interpreting the foregoing quantitative conclusions relating to cyclical change and long-term growth in real output and productivity, two considerations are pertinent. The constant dollar estimates presented here may somewhat overstate cyclical fluctuations, mainly because the price indexes which are used in deflating the current-dollar gross national product cannot take full account of discounts, special sales, and premiums reflected in actual prices charged in market transactions. With reference to the long-term rates of growth, it should be kept in mind that price indexes, and hence the constant-dollar gross national product, can take only partial account of quality improvement and the intro-

duction of superior products—factors that are important in a progressive economy.

### *War and postwar movements*

In the period covered by the new estimates, the war and post-war movements in the volume of real output are the most difficult to interpret because of the sharp changes that occurred in the pattern of production and in the level of prices.

It appears that, owing to limitations of the estimates, the war-time increase in national output is somewhat overstated, and that the rate of increase in the immediately following years of postwar recovery is too low. However, there is no reason to think that comparisons of recent postwar with pre-war years are affected. These conclusions stem from the consideration of two factors.

In the first place, it is probable that the available price information used to correct the current dollar estimates for price change somewhat understates the effective price increase that occurred during the war, and that it somewhat overstates the increase that occurred immediately after the abolition of price controls and also in the later stages of the postwar inflation.

Secondly, it must be remembered that shifts of employment towards lines of production in which gross product per unit of labor input is higher or lower are reflected as increases or decreases in constant-dollar gross national product. In ordinary market conditions this measurement of the volume of production is satisfactory for most purposes. For the war, however, the results are subject to some qualification.

### *Wartime changes in production*

Basically, the large increase in national product during World War II was due to an extraordinary expansion in the labor forces and employment, longer hours of work, an increased volume of capital equipment, large-scale operations and technological progress in war production, and to a better utilization of labor and productive capacity in many civilian industries. Similarly, the reconversion contraction reflected a reversal of these forces. However, the two factors noted above—inadequacies relating to the measurement of prices and output shifts—also affected the movement of the constant dollar series over this period.

During the war discounts and special sales were eliminated on a large scale, the quality of commodities tended to deteriorate, and services rendered in connection with their sale as well as separately were often impaired. In calculating the effective price increases that occurred during the war, account was taken of some of these factors. However, to the extent that complete allowance could not be made, the constant dollar volume of production is overstated.

Shifts of employment toward lines of production in which gross product per unit of labor input was relatively high occurred on a large scale during World War II. Within the consumer field, there were shifts toward higher price lines, as distinct from straight price increases. For the economy as a whole, the shift toward munitions production probably had a similar effect. What in terms of employment appeared to be a change-over in production was reflected as an increase in total output as measured by constant-dollar gross national product. Opposite shifts occurred after the war and tended to hold down the increase in the constant dollar measure, particularly in the initial period of readjustment.

In view of the peculiar circumstances in which some of these shifts occurred, it may be questioned whether they should be reflected fully as changes in the volume of output. For instance, while to some extent shifts toward higher price lines of consumers goods were the normal response of con-

sumers to a higher level of income, they were also forced upon them by the disappearance of cheaper price lines. Moreover, while price differentials usually tend to reflect corresponding cost differentials, this ceased to be true in some instances during the war. It can be argued that in cases such as these, shifts toward higher price lines should not be shown as increases in output. In any event, the special conditions under which they occurred should be kept in mind in interpreting the statistical results. Similarly, if the shift to war output resulted in an increase in constant-dollar gross national product because the rates of remuneration of the factors of production in war output were higher than in nonwar output, the statistical results may have to be qualified to the extent that these differentials were the temporary results of disturbed war conditions.

### *Postwar increase in output*

As can be seen from the chart, constant-dollar gross national product was virtually unchanged from 1946 to 1947; 1948 is the first postwar year that shows an increase. The major explanation of this late timing in the recovery of postwar production is the continued contraction of government employment in 1947. Gross private product shows an increase from 1946 to 1947. (See table 1.) However, there is some reason to believe that the true increase was somewhat larger than the one shown.

The abolition of price controls in the latter half of 1946 resulted in increases in published price quotations in many instances in which only a shift from covert to overt price increases occurred. If allowance could be made for this factor, a larger increase in output from 1946 to 1947 would be shown. Additional factors, not confined to the 1946-47 change, which understate the rise in the output measure over the early postwar period arise from the fact that it is not possible to account fully for the re-emergence of discounts and special sales and of gradual improvement in the quality of goods and services.

## **Statistical Sources and Methods**

### *Output valued at market prices of 1939*

To derive the measure of real output presented in this report, output was expressed at constant market prices. The alternative of valuing output at constant factor prices (i. e., at market prices less indirect business taxes plus subsidies) was not used. Regarding the practical reasons for this choice, it should be noted that the quantitative difference between the two measures of output would be negligible, since indirect business taxes and subsidies are not important in the United States price structure. The market price concept was adopted because it afforded a simpler and more accurate basis of statistical measurement, particularly in view of the degree of detail in which the results were desired. Available information refers to market prices of goods and services, and the detailed allocation of indirect taxes and subsidies that would be necessary to arrive at their factor prices is a complex statistical problem that cannot be solved accurately.

In the estimates presented in this report, market prices of 1939 were used to value output. (A departure from the use of 1939 prices in the case of munitions purchases will be noted later.) However, unless the various physical quantities or their relative prices all change in the same proportion, the use of prices of different years as the constant price base will result in different percentage movements of the composite series, and no unique measure of the change in real output is possible.

While theoretical considerations indicate that under these circumstances comprehensive output comparisons call for

calculations in terms of the prices of each year to which the comparisons refer, the vast additional labor involved in constructing the full array of output series did not seem warranted. Various tests indicated that choice of market prices prevailing in other years as the basis of valuation would not, in general, have greatly affected the relative movement of the series shown in the accompanying table.

Prices of 1939 were chosen primarily because the use of the prices of a more recent year, for which statistical information is still tentative, as the basis of valuation might have necessitated frequent revisions in the entire constant dollar series. However, the basic data are equally well adapted for calculating national output in terms of the prices of any other year of the 1929-49 period. Publication of the full detail of the product breakdown of deflated gross national product will, in conjunction with current dollar information, provide the users of the data with all the information necessary for undertaking such calculations.

It should be emphasized that to the extent that the relative movements of constant-dollar gross national product and of its components, and the proportions of these components to each other, are unaffected by the choice of the particular set of constant prices in terms of which they are expressed, that choice is really a matter of indifference. For it is only percentage relations that matter. The absolute level of the dollar magnitudes has no significance.

### *General deflation procedure*

The general statistical procedure for obtaining constant-dollar gross national product is to divide the current dollar estimates, in as fine a product detail as possible, by appropriate price indexes based on 1939 as 100, in order to eliminate from the current dollar estimates all price change as compared with 1939.

In most cases the information on prices is available in greater detail than the current dollar estimates. For instance, personal consumption expenditures for shoes and other footwear cannot be further broken down for all years in the current dollar estimates; but price indexes are available separately for an extensive list of footwear items. In situations such as these, the full information on prices is utilized by combining the various indexes into composites and by dividing the current dollar series by them.

The weights given to the various indexes are usually proportionate to their relative importance in terms of expenditures for the products in 1939 or some other year for which detailed expenditure data are available. The choice of 1939 in many cases is due to the fact that the availability of industrial censuses facilitates the estimation of detailed expenditure patterns for that year.

From the standpoint of deriving data in terms of constant prices of 1939, this procedure of assigning fixed weights to the price series is not strictly appropriate. Ideally, shifting weights, reflecting the expenditure patterns of the years for which current values are to be expressed in terms of 1939 prices, should be used. However, as has just been noted, this detail on current dollar expenditure patterns is lacking. The constant dollar estimates for the various components will be in error to the extent that price movements are disparate and current quantity expenditure patterns depart from the one used for weighting the individual price series.

Conclusive tests of the magnitude of the error cannot be made. They would require exactly the type of information for lack of which the statistical procedure being judged is adopted. However, relevant tests indicate that the error is likely, in general, to be negligible.

These tests are applied to series for which in all years the product detail of the current dollar estimates matches that of the prices indexes. Deflated estimates derived by the correct procedure—in which separately deflated components

Table 1.—Gross National Product or Expenditure at Constant Dollars, 1929-49<sup>1</sup>

(Millions of 1939 dollars)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Gross national product.....	85.3	78.1	72.3	61.9	61.5	67.9	73.9	83.9	87.9	84.0	91.3	100.0	115.5	129.7	140.7	153.9	153.4	168.4	183.6	193.1	192.3
Personal consumption expenditures.....	62.2	58.9	54.6	51.8	51.1	54.9	57.2	62.8	65.9	63.9	67.5	71.3	76.6	78.5	78.0	81.1	85.3	95.7	95.3	109.9	108.9
Durable goods.....	8.0	6.4	5.0	3.0	3.8	4.4	5.4	6.6	7.0	6.7	7.7	8.9	9.7	9.7	9.0	8.1	8.3	10.4	12.3	12.6	12.9
Nondurable goods.....	29.1	27.7	27.6	25.2	24.9	27.0	28.0	31.8	32.9	33.4	35.3	37.1	40.1	41.3	42.6	44.3	47.9	50.2	49.5	49.7	50.4
Services.....	25.1	24.6	23.9	22.7	22.4	23.6	23.2	24.9	25.1	24.8	25.6	26.5	27.6	28.5	28.4	28.0	33.2	35.2	35.4	37.7	35.6
Gross private domestic investment.....	14.9	10.1	5.9	1.8	1.5	3.6	6.7	9.3	11.4	13.3	12.7	17.1	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
New construction.....	7.4	5.4	3.3	2.1	1.5	1.7	2.2	3.1	3.8	3.3	4.6	4.4	8.1	8.3	1.9	2.0	2.6	6.0	6.9	8.0	7.9
Producers' durable equipment.....	4.1	4.3	2.2	1.9	2.0	2.7	3.6	4.6	6.6	8.9	4.6	8.0	7.2	4.4	3.6	5.1	5.7	9.9	11.6	12.6	11.9
Change in business inventories.....	1.5	—2	—1.1	—3.0	—1.8	—0.9	—0	1.4	2.1	—1.0	—	2.2	2.6	1.4	—1	—	—1.0	4.4	—	2.3	—2.1
Net foreign investment.....	—3	—6	—3	—2	—3	—3	—1	—2	—1	1.0	—3	1.2	—7	—4	—2.1	—2.2	—1.6	2.7	4.9	1.4	—5
Government purchases of goods and services.....	7.8	8.7	8.4	8.9	8.7	10.1	10.1	11.6	11.4	12.7	13.1	13.0	21.1	45.9	64.3	71.2	69.6	18.6	16.1	18.0	22.8
Federal.....	1.2	1.5	1.6	1.7	2.3	3.1	3.0	4.9	4.1	5.3	5.3	6.1	13.6	32.3	58.2	65.4	64.6	12.8	8.5	10.8	12.8
State and local.....	4.6	7.2	7.8	7.2	6.4	7.0	7.1	7.1	6.9	7.4	7.8	7.7	7.3	6.7	6.1	6.0	6.0	6.8	7.6	8.2	9.2
Gross private product <sup>2</sup> .....	81.5	73.5	67.7	57.4	58.5	62.0	67.6	76.4	80.9	78.4	83.7	92.1	106.2	116.5	126.3	132.0	129.7	135.6	138.3	139.3	132.0
Gross government product <sup>3</sup> .....	4.4	4.6	4.7	4.6	5.0	5.9	6.3	7.5	6.9	7.6	7.6	7.8	8.3	13.1	30.3	22.0	23.7	12.8	9.8	9.8	10.3

<sup>1</sup> Detail will not necessarily add to totals because of rounding.<sup>2</sup> Gross national product less compensation of general government employees.<sup>3</sup> Compensation of general Government employees.

Source: U. S. Department of Commerce, Office of Business Economics.

are combined without committing a weighting error—are compared with estimates obtained by deflating the sum of the components by composite price indexes based on fixed weights.

Such comparisons show that differences are small even when the fixed weighting procedure is applied to fairly broad segments, and that they tend to become even smaller as the segment is narrowed. If this tendency carries through to the still narrower segments for which there is actual resort to price indexes with fixed weights, the resulting error must be unimportant.

In the following sections the major statistical sources and methods used in deriving the constant dollar components of gross national product are outlined.

### Personal consumption

The general procedure for deriving constant-dollar personal consumption expenditures for goods and services was to divide the current dollar estimates, in a detail sometimes finer than that of the published annual estimates, by price series that are components of the Consumers' Price Index of the Bureau of Labor Statistics and of the series on Prices Paid by Farmers of the Bureau of Agricultural Economics.

These two sets of prices were combined to give representation to prices paid by both urban and rural purchasers. It should be noted, however, that this procedure by no means secures complete representation of all major purchaser groups. For instance, the prices reflected in the BLS consumer price index are those paid by moderate income families in large cities. Prices paid by other urban groups—families living in small cities and in towns, and families in low and in high income brackets, for instance—are not included.

Any differences in movement between these prices and those covered by the indexes lead to error in the deflation of the current dollar estimates of personal consumption by means of the indexes. To the extent, however, that differences in the cost of living of various groups are due merely to different consumption patterns—while the prices of similar goods and services are the same—no errors, of course, are introduced.

For the years 1942-47 an adjustment was made to the published price indexes for their failure to take account of the full price increase that took place during and immediately after World War II. The basic study in which the techniques for making these adjustments were first developed

is the "Report of the Technical Committee Appointed by the Chairman of the President's Committee on the Cost of Living, June 15, 1944."

For the types of commodities and services for which BLS and BAE price series are not appropriate, a wide variety of sources was used. These included special price indexes computed by other agencies; price indexes derived from published price data, such as mail-order catalogues; price indexes constructed by adjusting information on costs to a price basis by allowing for changes in profit margins; and physical volume indexes, in instances in which this direct approach was superior to the price deflation approach.

Estimates for all components of personal consumption expenditures have not yet been completed with the degree of detail which is planned for the final estimates. The present estimates of personal consumption, in which the partial results of the longer-run study were rounded out by short-cut procedures, are likely to differ most from the final ones in the case of expenditures for services. This is the area in which statistical information is most deficient and in which most of the improvising was done.

### Investment

The deflation of private new construction was based largely on the constant dollar estimates of construction prepared by the Office of Industry and Commerce of the Department of Commerce. These estimates—a regularly published series—were obtained by dividing the components of the current dollar estimates of new construction by a detailed list of construction cost indexes, prepared by private and other Government agencies. These indexes are obtained, in general, by pricing fixed lists of construction materials and labor.

Since the current dollar estimates of new construction are in terms of selling prices, their deflation by means of these indexes is not strictly appropriate. Their movement will vary from that of selling prices if there are changes in productivity and in profit margins. It was not found possible to make an adjustment for productivity changes.

However, a rough adjustment for changing profit margins was introduced. There is strong evidence that in the construction industry changes in profit margins and in productivity are inversely correlated during the business cycle. Hence the errors due to the neglect of profit margins and of productivity are additive, and adjustment for only one of these factors will make the indexes a closer approximation of changes in selling prices.

BLS wholesale price indexes and Interstate Commerce Commission price indexes were the major data used for deflating producers' purchases of durable equipment, in a product detail which went somewhat beyond that in which the estimates have been published for the years 1929-45. Further breakdowns were estimated, for deflation purposes, in instances in which there were indications that the alternative procedure of dividing broader current dollar components by fixed-weighted composite price indexes might yield significantly erroneous results.

Whenever composite price indexes were used, the weights for combining their components were as far as possible based on 1939 product values, derived mainly from the 1939 Census of Manufactures. For price series used for products for which values were not enumerated separately in the census and for composite price indexes that could not be broken down further, the weights underlying the BLS and ICC composites were accepted. BLS and ICC information was supplemented by price indexes compiled by other agencies or constructed from mail-order catalogs and other published sources of price data.

The deflated estimates of net change in nonfarm business inventories were derived in the process of estimating the inventory component of the current-dollar gross national product series. This process consisted of converting year-end book values of inventories into a series expressed in 1939 dollars; taking the difference of these results; and multiplying the increments by the ratio of current prices to base-year prices. The required constant dollar series was available directly from the second step.

BLS wholesale price indexes were the major source of price information used for deflation of the book-value inventory data. In general, the inventories of each industry listed in the annual industrial breakdown of the national income were deflated separately. Total inventories for each industry were deflated by composites of price indexes appropriate to the industry. The indexes were weighted, as far as possible, by the relative importance in 1939 of the principal types of inventory goods represented by the indexes. The inventory data used for weights were derived mainly from the 1939 industrial censuses. In instances in which relative inventory weights could not be ascertained, BLS weights (based on sales) were employed.

Year-end book values of inventories reflect the prices prevailing at various points of time. The exact time pattern reflected depends on the methods of inventory accounting used and on the rate of turnover of goods. Accordingly the price indexes had to be appropriately lagged before being used to deflate the year-end book value of inventories. These lags were estimated on the basis of available sample information on the methods of inventory accounting in the various industries and of turnover ratios computed from Census and Bureau of Internal Revenue information for 1939.

In estimating the net change in farm inventories, quantity data furnished by the Bureau of Agricultural Economics on year-end stocks of crops and livestock were utilized. The net changes in these physical stocks were valued at prices prevailing at the end of 1939.

The net foreign investment component of gross national product was deflated by separately adjusting for price change the receipts and payments items in the current balance of payments, whose difference net foreign investment represents. The alternative procedure of deflating the net balance directly will be given consideration in the final report.

The constant dollar series of merchandise exports and imports were based on the indexes of value, quantity, and unit value prepared by the Office of International Trade of the Department of Commerce. The weighting procedures

used in deriving these indexes are not strictly appropriate for purposes of expressing merchandise exports and imports in terms of 1939 dollars, but tests indicated that theoretically superior weighting procedures would not yield significantly different over-all results.

Statistical information for deflating the service items in the current balance of payments is deficient. Moreover, problems that do not even admit of a clear-cut theoretical solution are involved. Further work is planned on this segment, but it is not anticipated that revisions will be large in absolute terms.

### *Government purchases*

The deflation of Government purchases of goods and services was particularly difficult because information on the product breakdown of Government purchases, as well as on the prices paid by Government, is deficient. During World War II the task of deflating Government purchases was further complicated by the fact that munitions of changing types and quality were acquired by the Federal Government in large amounts.

For purposes of deflation the current dollar breakdown of Federal Government purchases as published on an annual basis was supplemented by further detail in each of the categories listed—compensation of employees, net purchases from business, and net purchases from abroad. Compensation of employees was divided into military, civilian except work relief, and work-relief wages; and supplements to wages and salaries were also broken down further, to the extent necessary for deflation. Construction was subdivided in the considerable detail in which the estimates published by the Office of Industry and Commerce are available.

Other purchases from business were divided further by segregating net purchases of silver; the net change in the inventories of Government enterprises; munitions expenditures, for years in which their size was significant; and rough groupings of the remaining purchases into the object classes used in the Federal budget. Within these object classes a fixed pattern of expenditures—the one prevailing in 1938—was assumed for all years for want of better information. Net purchases from abroad were also broken down further.

In general, the deflated Federal compensation of employees items are an extrapolation of the base year figures by man-hours wherever possible and employment when man-hours were not available or appropriate, as for military service. It may be noted that this series and the corresponding one for State and local government measure the gross product originating in government, as shown in the table.

Deflated estimates of Federal construction represent Office of Industry and Commerce data, with the allowance for changing profit margins noted in the discussion of private construction. The volume of silver purchases was based on direct quantity data. The net change in the inventories of Federal Government enterprises was estimated for the Commodity Credit Corporation from quantity data, which were valued at 1939 prices, and for other enterprises by less satisfactory procedures involving the deflation of book values by lagged price-index composites.

The deflation of munitions purchases, which constituted a special problem, is described and evaluated below. The remaining types of Federal purchases from business were deflated by matching them with price series that appeared most nearly representative—largely selected from BLS wholesale price data. The deflation of net purchases from abroad is subject to limitations similar to those noted for the services component of net foreign investment.

Further work is projected on the deflation of Federal Government purchases. Two aspects of this work should be distinguished. First, there will be refinements of the

methodology just outlined. It is not likely that they will substantially modify the results. The additional information on the object breakdown of purchases and on the prices relevant to this breakdown which can be made available by further investigation is not likely to be large. Moreover, even considerable modifications in the object breakdown and in the price series used probably would not affect materially the over-all results. This judgment is based upon experimentation with alternative weighting systems and price series in connection with deflating Government purchases and other components of gross national product.

The second aspect of the projected work relates to the treatment of munitions expenditures. Here the generalization just made does not apply. In this case experimentation has indicated that alternative methods of constructing a volume measure and alternative weights given to this measure will have a significant influence on constant-dollar gross national product.

In the measures presented in this report, munitions expenditures were deflated for the war years by a special index of munitions prices based on series compiled by the War and Navy Departments. For the postwar years this index was not available, and an extension of it was made on the basis of price series that seemed most appropriate—selected largely from those used for the deflation of producers' purchases of durable equipment.

The general procedure of expressing all volumes in 1939 prices was not followed. Relative munition prices in 1939

were high as compared with later years, owing largely to the small scale and experimental state of munitions production. It seemed more reasonable to assign to munitions purchases a weight in proportion to their relative prices in 1944, by which year the prices of munitions reflected a lower relative cost pattern.

This method of deflating munitions expenditures appears to be the most satisfactory. However, the final estimates will be accompanied by a full discussion of alternatives and a presentation of their quantitative results. In view of the conceptual and statistical difficulties involved, such a discussion is essential for intensive use of the data; in the meantime, the movement shown by the series during the war period should be interpreted with caution.

The general procedure for deflating State and local government purchases of goods and services was similar to that adopted for Federal Government purchases. Changes in the employee compensation component of deflated purchases reflect the movement of employment. Deflated construction represents Office of Industry and Commerce data, adjusted for changing profit margins. An estimate available for 1947 of the distribution of other purchases from business was applied in all years for lack of further information; and the current breakdown so obtained was deflated by price series that seemed most nearly applicable, largely selected from BLS wholesale price data. Further work is projected on this component of deflated gross national product also, but material modifications are not expected.

## February Annual Review Number

In recent years there has been great demand for separate copies of the February Annual Review Number of the **SURVEY OF CURRENT BUSINESS** from non-subscribers, and this has resulted in early exhaustion of the available supply. Although additional copies will be printed this year, subscribers are advised to place their orders promptly after receiving their regular copies.

The Annual Review Number is highly prized by many persons as an historical record of business progress. However, its numerous charts and summary statistical tables, interspersed through brief textual analyses of important economic developments, also make this 72-page publication an invaluable aid in considering the business outlook. Forty pages of business statistics compiled from commercial and governmental sources provide a month-by-

month progress report on more than 2,600 significant series, including general business indicators, commodities, securities, trade, manufacturing and employment.

Last year's similar issue was subtitled "The Economy in Adjustment". This year the dovetailing of that adjustment into a period of National Emergency will be recounted and analyzed. The February 1951 Annual Review Number will trace the course of business before and after Korea in considerable detail, with brief incisive sections covering: The Trend of Prices, National Income and Production, Industrial Production, Agricultural Production and Income, Construction Activity, Domestic Business Developments, Retail Sales, Foreign Trade, Financial Developments, Employment and Labor Conditions and the Business Population.

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